ADVANCES IN MATERIALS ENGINEERING

Volume 2

Edited By:
Md Abdul Maleque
Iskandar Idris Yaacob
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Chapter 027

Surface Quality of *Dipterocarpus Spp* under Tropical Climate Change: Effect of Pre–Weathering

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Keywords: Pre-weathering, Chemical composition, Wettability, Contact angle, *Dipterocarpu spp.*

Abstract. This chapter investigates the properties of *Dipterocarpus spp* (keruing) species after weathering for two and four weeks. The adhesion properties were evaluated by determining the wettability and surface quality of the samples. The samples were first planed and coated at the edges being exposed to the weather. The results show that the wettability of weathered *Dipterocarpus spp* increased tremendously (i.e 32 %) after 4 weeks of exposure compared to control samples. This also implies that the weathered *Dipterocarpus spp* would be relatively easily to bond due to better wettability. However, the chemical constituent of *Dipterocarpous spp* degrades after four weeks of exposure.

Introduction

Weathering before finishing (preweathered) can lead to chemical and physical changes on the wood surfaces that weaken the future painted of wood surface (William and Feist, 1994). From previous studies, wood preweathered for several months showed decrease in adhesion and shortened paint service life [1, 2].

This chapter is undertaken to determine the effect of weathering on preweathered (unprotected) wood after exposure for 2 and 4-week. The adhesion characteristics of *Dipterocarpus spp* (keruing) were determined by evaluating its wettability through contact angle measurement. The chemical analysis of samples was also determined.

Experimental Method

Preparation of Samples

In this study, *Dipterocarpus spp* was obtained from commercial sources. The samples were planed using single-planner machine. The samples sizes was 300 x 100 x 25 mm, and were end coated with epoxy paint at edges before being exposed to the weather condition. Twenty samples were preweathered at the Forest Research Institute Malaysia (FRIM), Kepong, Malaysia in October 2004 for a month. The samples were secured on steel rack oriented and exposed at 45^{O} facing south, for two and four weeks. Eight controls samples were stored in a